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Towards complex and integrated urban design in pre-crisis Spain: The case of the Padre Querbes urban project in Huesca

Elena Lacilla Larrodé, Harry Smith, José María Ordeig Corsini

Between 1990 and 2006 in Spain, municipalities with more than 10,000 inhabitants expanded by 58.28% in land area as a result of the housing bubble. This expansion provided the opportunity for an evolution in urban design practice integrating a variety of theories about the city that had evolved separately during the previous decades related to urban morphology, housing typology, density and attention to open space. The paper assesses these factors in an exemplar of this trend towards integration, which is the last major urban intervention that took place in Huesca before the financial crisis affected Spain: Padre Querbes neighbourhood.

Keywords: urban design; urban morphology; density; building type; open space; Spain; Huesca;

Introduction

During the 20th century, the territorial structure of Spain was transformed from a rural base to a primarily urban society, in which more than half of the population is concentrated in urban areas greater than 50,000 inhabitants, compared to only a sixth in 1900 (García, 2016). The expansion of Spanish cities took place particularly during two periods in the second half of the 20th century. The first period of urban expansion happened in the sixties and seventies, with a favourable economy and strong rural immigration. It was slowed down in the eighties by the financial crisis, with this deceleration allowing the stitching together of unconnected urban tissues (Moya, 1983). The second period of expansion would come with the turn of the century, dominated mainly by two models: an urban periphery that suffered oversized public space provision, and a low-density suburban periphery that took advantage of the great expansion of infrastructures.

During this second expansion, the strong growth of cities is reflected in the evolution of artificial surfaces as expressed in the three Corine Land Cover (CLC)¹ measurements (1991, 2000 and 2006), a trend that has led to a great transformation of urban areas in Spain. The municipalities with more than 10,000 inhabitants have seen an increase in urban area of 58,28%, from a total of 4.104 km² to 6.495 km². (García, 2016)

Within this process of urban transformation, the role of medium-sized cities – considered as those between 50,000 and 200,000 inhabitants – in the national urban system has been highlighted by Ganau & Vilagrasa (2003). Huesca, which this paper focuses on, is one of such cities, located in the Northeast of Spain. These medium-sized cities act as regional or provincial centres that allow the decongestion of the larger cities and bring urban services to their more rural environment, as well as being fairer and healthier human habitats. However, this group of cities has also been affected by strong changes in their spatial characteristics, which have been a consequence of the evolution that urban design has experienced more profoundly during the two recent periods of urban expansion in Spain.

Indeed, the concept of urban design which frames this article was considered by Jose Luis Sert from his beginnings within the architectural profession, spread by Ignasi Sola Morales through his writings, and shared by many other architects involved in urban development in Spain and elsewhere in recent decades. From its beginnings, Sert carefully pondered the issues of scale and the integration of human and mechanical factors into open space and its forms. His intention to express life and movement, and to focus on what happens between buildings, underpinned his approach in the establishment of the first urban design degree programme in the world. Ignasi de Sòla-Morales (1994,10) wrote that "the history of urban architecture of the last fifty years is

the history of a desire: to make the city from architecture" where "the structure of the city must be decomposed into smaller units in which the social life and the creative and participative capacities of the individuals could be incorporated into the architecture".

When analyzing the organization of the most lucid residential schemes during the turn of the century under this concept of urban design, a tension can be observed between what can be understood as a conscious recovery of the legacy of the Modern Movement and the incidence of key issues that have emerged and intensified under globalization, such as sustainability and integration. Therefore, after a period of revival of the perimeter block as the basic unit for urban expansion and renewal during the 1980s and 1990s, the return to the linear block (with variations) can be understood as a return to the so-called 'progressive' approach. Many examples from the last couple of decades insist on compositions with parallel blocks which leave the interstitial space between them open to the public space, such as the urban intervention in Jyväskylä in Suomi (Finland) by C. Díaz Moreno and E. Gracia Grinda in 2001, or the abundant cases of this model among the latest European competitions such as the Project for Strasbourg (France) by B. Resouche and L. Gonin (Caz et al., 2004). Likewise, this concept – and its theoretical evolution in Europe – influenced developments that contributed to the continuing urban transformation of Spanish cities. In Spain, the most paradigmatic example is the Mina del Morro Project in Bilbao in 1997 by E. Belzince, J. García Millán and L. Díaz-Mauriño.

In the case of Huesca, the evolution in urban design thinking manifested itself later than in other Spanish cities. However, Naval (1980, p. 93) establishes that Huesca "is not outstanding in the panorama of urban areas and therefore Huesca is limited to the group of smaller cities, but with characteristics that are vital and therefore capable of attracting interest". Labarta (in Dean et al., 2009, p. 15) also states that: "Huesca is a

small regional capital whose architectonic and urbanistic advantages exceed those that might be assumed by its size." Huesca is an example of urban coherence at a time when the largest cities in Spain cannot boast of this, due to the understanding by architects of the urban discourse for Huesca during this period, among other things.

It is interesting, therefore, to analyse what happened in this capital, specifically focusing on the case study of the urban project known as Padre Querbes, designed in 1999 and built in the early 2000s, which helps explore the hypothesis of this work. This is that after an evolution of urban design ideas in Spanish cities throughout the second half of the twentieth century, in the first decade of the twenty-first century (and linked to a real estate boom) some urban interventions integrated urban factors that had been taken into account only partially in the immediately preceding periods, such as urban form, the type of housing, density and attention to open space. This integration achieved both quantitative and qualitative improvements for the residents.

It is important to highlight that the urban development project analysed in this paper was the last urban intervention that was implemented in Huesca before the financial and housing market crisis. Since the crisis no other urban intervention on this scale has been made in Huesca, so it serves as a case study to explain the highest level of integration in urban design that was achieved, given that since then there has been no opportunity for this approach to urban design to evolve in another neighbourhood.

To provide some background for this approach to urban design, before examining this case study in detail, the paper explores the evolution of earlier urban design approaches in Huesca, through example urban projects which only partially considered the factors that the Padre Querbes addressed in an integrated and complex manner.

Background

Huesca is located in the region of Aragón, in the north of Spain, very close to the Pyrenees, and had 52,282 inhabitants in 2016 according to Spain's National Statistics Institute (INE)². The city of Huesca belongs to the category of medium-size cities according to the Commission of the European Communities. In Spain, the group of medium-sized cities consists of 115 municipalities with between 50,000 and 200,000 inhabitants, in which 23% of the national population lives (10.6 million people).

The morphology of Huesca is characterised by its compactness, its radio-centric structure and its urban fabric formed by an orthogonal grid mainly. It has provided the stage for an intense and vibrant urban life throughout its history. Its urban design evolved throughout the second half of the 20th century and there are four urban projects that best represent that evolution and adaptation to the urban theories of the moment, which can be reduced to: (1) attention to housing within a typological rigidity (early emergence of the Modern Movement); (2) the search for greater efficiency and density; (3) attention to open space; and (4) a return to traditional city form (historicist reaction of the 80s).

The first of these, the Perpetuo Socorro neighbourhood, was developed in the 1950s and 1960s on the basis of city blocks financed by public agencies, mostly by the Obra Sindical del Hogar³. Its urban design was influenced by the Building Law of the National Housing Institute, which since the end of the Spanish Civil War in 1939, had been prepared to regulate the construction of all state-subsidised housing. These regulations advocated and imposed a model of urban space that drew on the legacy of the Modern Movement. They promoted the double-aspect housing block (for hygienist reasons), the fragmentation of the urban fabric using linear housing, and enclosures that

were free of road traffic. In short, the Perpetuo Socorro neighbourhood was the first manifestation of modern rationalism in Huesca (Figure 1).



Figure 1. Orthophoto (own elaboration from Google Maps, 2014) and urban project of the Perpetuo Socorro neighbourhood according to the General Structure Plan (Emilio Larrodera, 1958).

The second example is the urban project for the areas called “9 and 17”, which used five-bay housing blocks with ground floor plus twelve storeys, an internal courtyard, and a land occupancy of only 25%, which left a large part of the land area to be used for parking and greenspace. Within these green spaces, the creation of a small public park of more than 5,000 m² deserves special consideration. These open spaces were scattered throughout the development, surrounding the residential blocks and providing a buffer from traffic and circulation routes. This was perhaps one of the greatest achievements of the move away from the enclosed perimeter block to the linear block model. In addition, density was a very important factor to ensure the desired return on the investment, but also as a way of achieving a level of urban intensity despite the amount of open space. The proposal achieved a density of 240 units/Ha. (Figure 2).

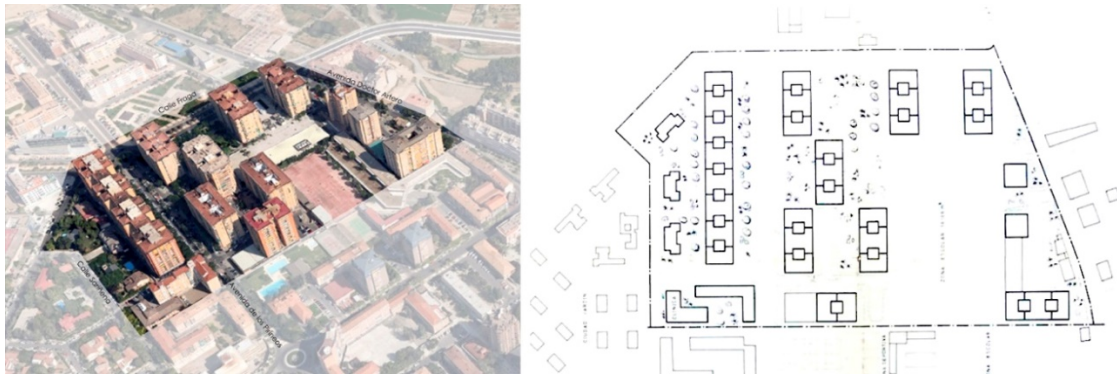


Figure 2. Orthophoto (own elaboration from Google Maps, 2014) and urban project of the Area 9 and 17 neighbourhood (Miguel Aranda Jaquotot, 1970)

The third urban project, Area 13, was developed in the 1980s (Figure 3). Its urban design focused on a sculptural public realm mainly formed by the concatenation of an H-shaped residential typology, with four dwellings per storey. This was the most used building type in Spain in this decade due to a social housing law which tried to show that this kind of block was the most efficient and economical. The layout of the buildings sought the creation of a single large open space instead of residual spaces between blocks. This approach showed the interest in encouraging social interaction among the scheme residents.

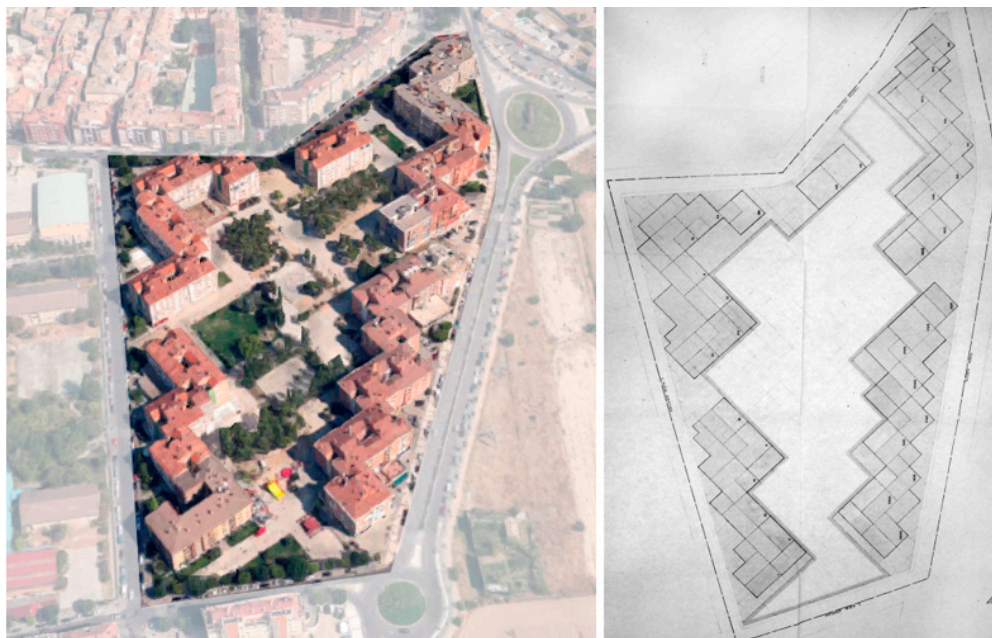


Figure 3. Orthophoto (own elaboration from Google Maps, 2014) and urban project for the Area 13 neighbourhood (Manuel Guzmán Folgueras y Alfonso Fernández Castro, 1981)

The fourth proposal, Area 25, was developed between 1980 and 1983. The plot maintained the grid character of this phase of city expansion, but block design was radically different from what exists in its surroundings (Figure 4). Although using a perimeter block approach, this was not completely enclosed. Rather, the blocks' internal spaces were made accessible and were integrated into the public open space system of the area. The building typology was based on a three-bay housing block with two façades. Thus, the main characteristic of the new design paradigm would be the classic guidelines of continuity and unity of urban fabrics throughout the perimeter block typology, and of complementarity between their facilities and landscapes. This recovery of a classic urban form was also put into practice in other Spanish cities, from Madrid to Barcelona, through Seville, Pamplona and San Sebastian.

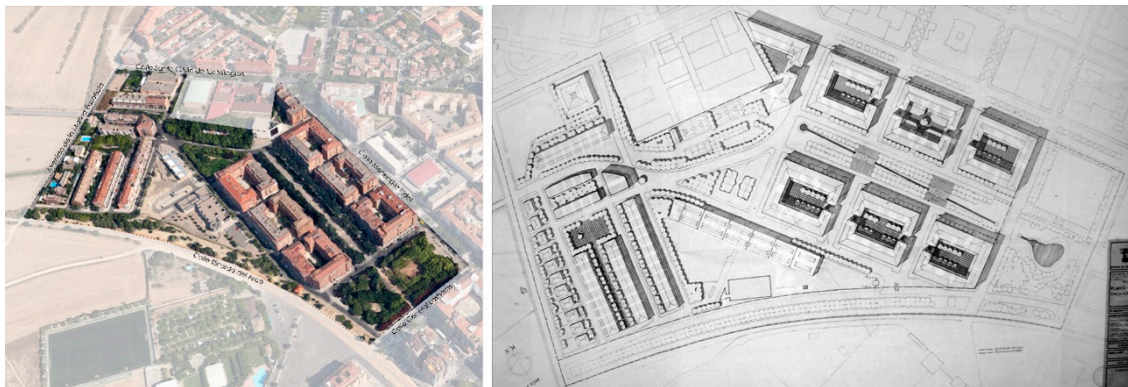


Figure 4. Orthophoto (own elaboration from Google Maps, 2014) and urban project for the Area 25 neighbourhood (Jesús Tejada Villaverde. 1983)

All four of these projects addressed the conditions of their time in innovative ways, contributing to the cumulative configuration of urban form and space in Huesca. Moving forward in time, this paper focuses on the Padre Querbes Plan for two reasons. On the one hand, because it integrates all the factors that the previous projects had addressed in an isolated way such as the urban morphology, the type of housing, density and attention to open space. And on the other hand, because it is the last major urban

intervention carried out in Huesca before the financial crisis hit Spain, thus reflecting the evolution and advancement achieved in urban design until that moment.

This paper contends that the urban design offered by the Padre Querbes proposal achieves a balance between these four factors. The research next examines these looking first at how the proposal relates to the form of the city, departing from historicist rigidity; then it reflects on its typological variety in contrast to the homogeneity of the first Modern; it continues with density, taking into account various considerations in the field of urban design; and it finishes considering how the proposal's attention to landscape is a variant of the increasing focus on open space globally.

Urban morphology

The Padre Querbes neighbourhood is located in a part of the city where buildings of very diverse scales were mixed, giving rise to an urban edge devoid of structure. Padre Querbes was a brownfield site, an area that had undergone a process of degradation and functional obsolescence that called for a direct urban intervention. In 1999, architects Francisco Lacruz and Concepción Ruiz Monserrat, together with lawyer José Antonio Garcés Nogués, prepared the Padre Querbes Urban Project, in which open space became particularly prominent and the urban form responded to the future design of an adjacent large park.

The Padre Querbes masterplan arises from totally different criteria to those that were prevalent in the city of Huesca until then, which were more in line with the recovery of traditional typologies. In this urban project a different solution arises, as if the image citizens have of the city had been fragmented and then recomposed into a new possibility, breaking with the established system that underpinned both the expansion to the east and the developments in the south and west. It meant a new model

of contemporary city, with a formal freedom that draws attention to its urban environment.

The urban design was based on strengthening the marked residential character of the area. This responded to the analysis made in the Preliminary General Structure Plan for Huesca in 1994 regarding the situation of the real estate market in the city. The study highlighted the demand for single family dwellings – as opposed to the traditionally flatted developments in the city. This provided the basis for the design of a new residential area with a wide typological variety and a public park, complete with the corresponding vehicular, pedestrian and parking areas.

After analysing the urban environment and other factors including social and economic ones, among others, the architects proposed open blocks in order to achieve the lowest possible land occupation and to ensure that most of the land in the project area would contribute to the public park.

As for the general layout of the proposal, the buildings were concentrated in the northern part of the development area, leaving the large public park in the south. The site layout was designed with the intention of respecting the green spaces, with building heights being staggered so that the tallest buildings were located to the north and the lowest to the south. Thus, the public and private gardens always enjoy adequate sun exposure and there is a direct relationship between the private green spaces of the plots with single-family houses and the aforementioned park. Due to the staggered arrangement of the building, there are three typologically distinct strips (figure 5).



Figure 5. The urban form of Padre Querbes (Lacruz and Ruiz, 1999).

The first one is composed of three C-shaped blocks in the middle of the strip, one L-shaped block in the west corner and a V-shaped block in the east. The second strip is formed by three blocks in which the building heights were staggered from the four storeys on the side facing the first strip down to two on the frontage to the park. And the third strip, closest to the park, consists of three blocks which are arranged obliquely breaking the orthogonality of the two previous. In spite of the differences

between these strips and blocks, they have a feature in common. All the dwellings have a private open space, in the form of a garden if they are on the ground floor and of a terrace overlooking the large park if they are on an upper storey.

However, Padre Querbes also has other uses besides residential. The ground floor of the blocks in the first and second strips has several premises with non-residential uses along the street that runs through the development. A building with a public function is located adjacent to the existing public facility, near the city. Another relevant point is how vehicular traffic is managed. It has been given a secondary role in the urban project, with only a narrow road between the first and second strips of development.

In the Padre Querbes urban project, the rupture of the orthogonal plot in its approach to the park as well as the lowering of the building heights provide a massing that reduces the development's scale, making it more human-scaled at its interface with the urban open space. This was a distinctive factor and a new approach that shows the evolution in the urban form. Likewise, as a consequence of its stepped form, it gave room to a variety of housing typologies, achieved optimal density standards, and created a large park which enhances the identity of Huesca through its landscape design – as can be seen next in turn.

Typological variety

Throughout history the shape of cities has been strongly influenced by preferences and habits in housing. As a corollary, the relationships between houses, the way they fit together to make neighbourhoods and the way they interrelate with other urban activities have determined the quality of city life (Logan, 1977). Housing is the most significant built form in the urban landscape and its success in achieving a sense of place is one of the bedrocks of social continuity (Firley and Stahl, 2009).

A key feature to analyse in this urban project is the housing typologies that occupy its distinctive stepped massing. The dwelling typology was a response to the demand for single-family houses that has emerged from the public consultation processes for the General Structure Plan of Huesca since 1958. Typological variety is one of the features that favours the project's staggered massing, and thus helps achieve its key objective of integration with the natural surroundings and continuity with the existing urban fabric.

The housing typology varies according to the proximity to the large park. To do this, the first strip – composed of three C-shaped blocks in its centre, an L-shaped block to the west and a V-shaped block to the east – has five storeys plus a penthouse. These blocks have inner courtyards where play areas, swimming pools, etc. are located. The C-shaped blocks in the middle have different housing typologies on each of their three sides. The eastern V-shaped block provides the link between the existing city fabric and Padre Querbes, since it is perpendicular to Pyrenees Avenue. It is formed by two storeys and its two sides are apartments and penthouses. The L-shaped block on the west corner forms part of the boundary between the city and the non-urbanized area. It presents a range of housing types with single-family houses and apartments on the same side and storey (Figure 6). In total, this five-block strip is composed of 20 single-family houses, 99 differently-sized apartments and 29 penthouses.



Figure 6. Padre Querbes: Dwelling types in the western block of the first strip, formed by single-family houses and apartments. (Francisco Lacruz and Monserrat Ruiz, 1999)

The second strip is formed by three blocks in which the building heights were staggered from four storeys on the side facing the first strip down to two on the frontage to the park, making a transition between the medium-height volumes of the first strip and the single-family houses of the third strip. To achieve this, special care was taken in the design of the stepped terraces towards the park which, as far as possible, present a clear and urban massing, with the intention of connecting the dwellings directly to the park through the "trays" formed by the terraces. In addition, there are public passages at ground floor level (Figure 7). These passages connect the internal road of the neighbourhood with the large park. Driving these passages through the building creates a feeling of privacy. These blocks contain 48 apartments and 12 penthouses. The apartments offer a variety in size from two to three bedrooms.



Figure 7. The passage between and under the second strip of blocks in Padre Querbes (author's photo, 2012)

The height of the buildings decreases towards the park. The third strip, closest to the park, has two storeys. It consists of three blocks which are arranged obliquely, breaking away from the orthogonality of the two previous blocks and allowing proposal softer merging of the development and the large park. These buildings have only single-family houses grouped together on one, two or three sides. These houses were designed for a suitable building scale that would make the group integrate in the park in a natural way. There are three types of internal layout, with their private gardens at the same level as the large park, thus becoming transitional spaces between the dwellings and the park. In total, there are 27 single-family houses (Figure 8).



Figure 8. Padre Querbes: Dwelling types in the third strip formed by single-family houses (Francisco Lacruz and Monserrat Ruiz, 1999)

Beyond these strips there is a residential block in the south-west corner which contains 28 apartments, 4 single-family houses and 4 penthouses.

This project proposed new dwelling types where the typological diversity depended on the location in relation to the park. The penthouses were considered more remote from the park and the single-family houses are totally integrated in it. Likewise, the massing of the building is not based on continuous straight lines but contains setbacks that harbour different spaces for new uses.

In total, the Padre Querbes scheme houses 270 dwellings with different types, dimensions and interior layouts. This offers a range of home environments for different kinds of households and ages which enhances the opportunities for social interaction between different kinds of people. This emphasis on typological diversity and on walk-up scale makes cities more varied and rich (Logan, 1977). Likewise, it could be said

that this variety in residential typology is possible thanks to the designed urban form and massing, which overcome the rigidity of previous projects and theories. This approach also is complemented by the density used in this case study, which also supports the human scale of the neighbourhood – as can be seen next.

Density

Density has been an important indicator of the spatial characteristics of an urban environment. This usually measures the amount of population or built surface area per unit area of land, in relation to a defined site or urban area. Thus, density has been used as a reference for the study of mobility and accessibility (Navarro & Ortuño, 2011), quality of life (Burton, 2000), energy consumption, the sustainability of cities (Frey, 1999; Navarro & Ortuño, 2011), and other issues (García, 2016).

Throughout urban planning history different architects, urban designers and urban thinkers have studied and expressed their ideal standards of density which guarantee health, hygiene and other criteria such as liveability (Unwin, 1909; Jacobs, 1961; Koolhaas, 1995; Hall, 1999; Fernandez et al., 2007; among others). However, and as it had been observed in architecture since the 1930s (Gropius, 1930), density alone is insufficient to determine the configuration of urban space. For this reason, a variable has gradually been incorporated that allows to evaluate the provision of space or, its equivalent, the compactness of the distribution of the built space. This value is purely spatial in nature and measures the relationship between the occupied and the total surface. If for architecture compactness allowed to establish clear relationships with architectural typologies (Berghauser & Haupt, 2009), at the scale of city compactness, defined in different ways, has served to evaluate features of spatial configuration such as proximity, centrality and fragmentation (Goerlich & Cantarino, 2012). These are values that not only reflect the formal characteristics but are intrinsically linked to the

way of life that takes place in cities (Goerlich & Cantarino, 2012). Density and compactness are indicators of the intensity and concentration of activities, which are essential aspects in any model of urban development. For this reason, the density of the project is measured here according to several factors such as the population and dwelling density, land use density, building height and spaciousness (Table 1).

Reference	Area [Ha.]	Built Area [Ha.]	Unbuilt Area [Ha.]	Occupied area [Ha.]	Density [Inh./Ha.]	Density [Dw./Ha.]	Land use	Building height	Spaciousness
Padre Querbes	4,23	3,53	2,85	1,38	236,88	63,83	33 %	2-5 storeys	14.442 m2
M. Berghauser						70			
Barcelona							50 %		
Christopher Alexander								< 4 storeys	
Current Regional Law									10 % of surf. > 18 m2/dw

Table 1. Different indicators of density in Padre Querbes related with other indicators throughout the history of town planning (own elaboration, 2017)

Regarding population and dwelling density, it was in the Netherlands where Cornelis van Eesteren and Th. K. van Lohuizen (Municipality of Amsterdam, 1934) first used dwelling density in a planning document. They studied the relationship between dwelling type and density and arrived at a density that would allow economically feasible land uses in combination with the construction of as many single-family houses as possible. Research into different building plot patterns has shown that with a density of 70 dwellings per hectare, 50 to 60 per cent of the dwellings could be constructed as single-family houses (Berghauser & Haupt, 2009). Indeed, the density of

Padre Querbes is 64 dwellings per hectare and single-family houses constitute 40% of the housing provision in this project.

However, it is necessary also to take into account other factors such as the land use density. This means also the intensity in an urban area as the relation between the physical environment and the liveability in a place. The intensity of the Padre Querbes project is 0,83m²built/m², and the land coverage is 33%. Site cover control has been actively used since the earliest times of contemporary urban planning. The expansion plan for Barcelona by Ildefonso Cerdà is a good example. There the coverage was restricted to a maximum of 50 % of the lots to guarantee good hygienic conditions. However, site cover needs to be complemented with measurements of other factors such as building height in order to define the character of the urban form and the intensity of a neighbourhood.

In order to achieve this, in most European countries at the end of the nineteenth and the beginning of the 20th centuries, building height and street width were regulated through specific ordinances. Walter Gropius argued that by planning for higher buildings, one could provide more open space without losing out on the number of dwellings (and population density). Later, Christopher Alexander, arguing against the modernist high-rise developments, introduced psychological arguments to subject all buildings to height restrictions (1977). To protect people from becoming crazy, Alexander advocated limiting the height of the majority of buildings in any urban area to four storeys or less, no matter how dense the area. In the case of Padre Querbes the height is variable, between five and two storeys. But it is also necessary take into account the amount of public space provided for the residents' activities.

The relationship between open space and total floor area, as a measurement of the quality of an urban plan, was called spaciousness (Berghauser & Haupt, 2009). This

can be viewed as an expression of the trade-offs between the developer's desire to maximize the building volume and the public and private demand for adequate open space. In this case, the Regional Law in Aragón is taken as a reference, as it provides a current indicator for measuring the spaciousness. It says that 10 % of the surface area of a development site should be destined to parks and gardens, pedestrian areas and playgrounds, at the same time these squared metres have to be more than 18 square metres for every dwelling. In the case of Padre Querbes, with 270 dwellings and 42,300 m² total land area, the open space provision of 14,442 m² by far surpasses the 4,230 m² required by the current law.

Recently developed diagrammatic methods allow comparison of the spatial characteristics of urban projects and areas according to density measures. The most well-known currently is the Spacecalculator, from Berghauser and Haupt's (2009) Spacematrix book. Applying the Spacecalculator to Padre Querbes shows its density standards are more closely related to Dutch urban projects than Spanish or German. The most common variables with Dutch urban projects are the building intensity which is measured by built area (m²)/total area (m²), the coverage measured by occupied land area (m²)/total land area (m²), and spaciousness as a measurement of the amount of non-built space at ground level per square metre of gross floor area.

It could be said that Padre Querbes has a density that assures hygiene, health and sunlight for its inhabitants, according to the previous theories related with density. Indeed, these indicators of density in Padre Querbes are achieved through the variety in its urban form and typology, as was explored earlier, getting at the same time a variation in the perception of the environment. This sets Padre Querbes aside from previous more standardised approaches to urban design such as that found in its adjacent neighbourhood, where the density is very similar at around 65 dw/Ha., but the urban

form is based on perimeter blocks which are totally homogeneous and create a very different urban environment to that of Padre Querbes.

Having looked at previous theories focused on the factors of urban form, building typology and density and how these are manifested in the design of Padre Querbes, the paper now turns to more recent approaches that have focused on open space. This factor can be also appreciated in Padre Querbes, as is examined next.

Attention to open space

The large park sited on the southern side of Padre Querbes was designed by a different team from the one that had designed the urban project as a whole. Specifically, Verzone Woods Architects⁴, based in La Cura de Rougemont in Switzerland, prepared the landscape project in 2002, with it being built between 2004 and 2007. The buildings had been organized in the northern part of the area, allowing the creation of a large public park of approximately 1.45 Ha. in the south. The large park of Padre Querbes merges with the dwellings in an attempt to create a dialogue between them through the landscape. The level of detail with which it was designed and the comprehensive design approach to the whole space, down to the last square metre, would become commonplace throughout the first decade of the 21st century.

Despite the apparently homogeneous design of the park, three spaces can be differentiated: two larger areas located on the boundary with the existing city, and one in the interior of the neighbourhood bounded by the buildings. Both types of area are connected by a trapezoidal space which is bounded on one of its sides by the Juan XXIII School and on its opposite side it abuts the blocks of the second and third strip. This last side stitches the park together with the built-up area. All of these open spaces are highly linked with the buildings.

The garden that is in contact with the existing city is designed differently from the rest of the park. It is a rectangular area bounded by the Juan XXIII School and the small area of non-residential use, with a blurred boundary with the large park. It is predominantly a lawn that is marked with lines in an East-West direction relating the park to the city. Planting and benches follow this linearity and rise from the ground to create the image of a field with straw bales distributed over its surface awaiting collection for storage (Figure 9). Pedestrian access to the large park is provided through this space.



Figure 9. The garden access to Padre Querbes (author's photo, 2012), and the longitudinal park in the south of Padre Querbes (Verzone Woods Architects, 2008).

Once this access is crossed, the pedestrian is located on a hard paved area from where the trapezoidal and longitudinal space starts. This is divided in two layers longitudinally separated by a line of trees of medium height following a zigzag line. The first layer is located next to the boundary wall with Juan XXIII School and contains play areas on hard paving that can be traversed until the interior of the development is reached. The second layer is the resulting strip that consists of a large surface of lawn where there is no defined path but spaces to stay. Small water channels come to this longitudinal space from the area of the park that is integrated within the buildings (Figure 10).



Figure 10. Aerial view of the Padre Querbes area (adapted from Google maps, 2015)

From this area, three interstitial spaces penetrate between the buildings. These spaces provide the link between the park and the residential buildings. The main ground treatment is a lawn, giving continuity to the rest of the large park. Water channels run through each of the three spaces in parallel and along the ends of the single-family house plot boundaries. These strips continue towards the taller buildings, extending the presence of the park and the agricultural identity of Huesca, which imbues all the neighbourhood (Figure 11).

Finally, one reaches the most interior and protected space. The ground surface treatment ranges from a soft turf surface to hard paving in yellow and red colours. In the central zone of this garden a small hill exists, which could be related to the settlement of the historical old town of Huesca on a mound, from where the whole surrounding plain could be seen (Figure 11).



Figure 11. The park between the buildings and the interior garden in Padre Querbes (author's photos, 2012)

It could be said that this open space achieves the quality criteria that some architects have identified over the years (Carmona et al., 2003; Gehl, 2010). It has protection against traffic and accidents, crime and violence, and unpleasant sensory experiences; it offers opportunities to walk, stand and stay, to sit, to see, to talk and listen, for play and exercise, to enjoy the positive aspects of climate, and positive sensory experiences; and has an appropriate scale (buildings and spaces designed to human scale).

Now, if the park is looked at as a whole, there is a consistency in the design approach across all its areas, which achieves a unitary open space throughout the project and, most importantly, a park which enhances the local culture and transmits the identity of the place to its inhabitants.

Conclusions

This last urban project built in Huesca before the crisis reached Spain offers an avant-garde urban design which encourages some values such as the quality of social relations, focuses on the use of sunlight and enhances the urban space while breaking away from the ordered urban form of Huesca, which is characterized by a grid structure. This change in urban design has an explanation within the evolution of its own theory. At the turn of the century, these values constituted the main criteria for the design of a

neighbourhood and they were discussed based on theories proposed and argued by planners throughout the 20th century.

Indeed, based on the concept of urban design which frames this article, as explained in the introduction, the research shows how the formal criteria of urban design in Europe have varied. When looking at the 90s and the turn of the century, a greater formal freedom in urban design appears. A highly valuable trend has emerged which draws on design criteria developed during the 20th century with an open mind, facilitating their adaptation to the place and to specific situations. As a consequence of this formal freedom, attention to the resulting urban space became one of the main characteristics of that decade. This approach would use the design of open space to try to link new urban projects with the surrounding urban environment, stitching these together (Broadbent, 1990; Gosling, 2003; Ellin, 1996).

In this way, the Padre Querbes plan is an exponent of this evolution towards greater freedom of design, within the parameters of city layout. That is, although aware of the need to continue the city (plot, paths, types) the design would not remain a mere repetition of the city extension block. The new form that the plot acquires and the interstitial spaces that are created become spatially relevant. It should be noted that in Padre Querbes, the design criteria chimed with those emerging in Europe at that time, at the beginning of the 21st century, which in exhaustive detail paid attention to each of the dimensions addressed in this paper.

But this versatility in the urban form is not only an overcoming of the previous historicist rigidity. This urban project meant for Huesca the passage from a dogmatic design to greater freedom and, therefore, a greater adaptability to the new social conditions, landscape and inherited factors. It also assumes that the other three factors analysed here (typology, density and open space) are addressed and improved through

considering these in an integral way. It offers a neighbourhood with quality of life as a whole. The physical features of this urban development suggest they would enhance social interactions between different kind of households and ages due to the variety in its housing types. This has indeed been observed during author visits to the site (Figure 11), in particular in the use of the big park that is integrated with the buildings. This urban development would warrant more in-depth research on the effects of its physical form on social interaction, including analysis of interviews and media coverage, which would make an interesting contribution to the extensive literature on environment and behaviour.

In addition, it guarantees a level of hygiene, health and sunlight thanks to its density standards. And it encourages place identity through the design of the open space based on landscape.

In that sense, it could be said that Padre Querbes goes beyond quantitative factors and manages to address a range of factors on which previous theories have been based in an isolated way, in a polished and updated way at the time of its development. So, the urban design of Padre Querbes achieved a liveable neighbourhood before the financial crisis arrived in Spain, thanks to the integration of different urban design theories which were updated and pooled in the same urban project, achieving a practical implementation of a synthesis of the urban design theory from previous decades.

Endnotes

1. The Corine Land Cover is an inventory of land cover according to 44 classes, based mostly on interpretation of satellite imagery. The inventory started in 1985 (reference year 1990) and has been updated in 2000, 2006 and 2012. Source: <https://land.copernicus.eu/pan-european/corine-land-cover> [accessed 4 July, 2018]
2. Instituto Nacional de Estadística. <http://www.ine.es/jaxiT3/Datos.htm?t=2875>

3. The Obra Sindical del Hogar was an institution created during the Franco dictatorship with the objective of trying to solve the housing problem through the construction and administration of public housing, which it then sold at a low price.
4. Team consisting of: Craig Verzone, Cristina Woods, Bernadino Espejo, Martin Gauthier, Nicole, Nancy Coulter, Amanda Bennett and Alayna Fraser.

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Table and figures

Table 1. Different indicators of density in Padre Querbes related with other indicators throughout the history of town planning (own elaboration, 2017)

Figure 1. Orthophoto (own elaboration from Google Maps, 2014) and urban project of the Perpetuo Socorro neighbourhood according to the General Structure Plan (Emilio Larrodera, 1958).

Figure 2. Orthophoto (own elaboration from Google Maps, 2014) and urban project of the Area 9 and 17 neighbourhood (Miguel Aranda Jaquotot, 1970)

Figure 3. Orthophoto (own elaboration from Google Maps, 2014) and urban project for the Area 13 neighbourhood (Manuel Guzmán Folgueras y Alfonso Fernández Castro. 1981)

Figure 4. Orthophoto (own elaboration from Google Maps, 2014) and urban project for the Area 25 neighbourhood (Jesús Tejada Villaverde. 1983)

Figure 5. The urban form of Padre Querbes (Lacruz and Ruiz, 1999).

Figure 6. Padre Querbes: Dwelling types in the western block of the first strip, formed by single-family houses and apartments. (Francisco Lacruz and Monserrat Ruiz, 1999)

Figure 7. The passage between and under the second strip of blocks in Padre Querbes (author's photo, 2012)

Figure 8. Padre Querbes: Dwelling types in the third strip formed by single-family houses (Francisco Lacruz and Monserrat Ruiz, 1999)

Figure 9. The garden access to Padre Querbes (author's photo, 2012), and the longitudinal park in the south of Padre Querbes (Verzone Woods Architects, 2008).

Figure 10. Aerial view of the Padre Querbes area (adapted from Google maps, 2015)

Figure 11. The park between the buildings and the interior garden in Padre Querbes (author's photos, 2012)